

Cyclosporiasis



Section 1:

ABOUT THE DISEASE

A. Etiologic Agent

Cyclospora cayetanensis is a coccidian protozoan parasite. Humans with cyclosporiasis shed the parasite in a non-infectious form that takes from several days to a couple of weeks to mature into its infectious form. The time required for maturation to the infectious form depends on factors such as temperature and moisture.

B. Clinical Description

This parasite infects the small intestine (bowel) and typically causes watery diarrhea. Other symptoms include nausea, vomiting, abdominal cramps, gas and bloating, fatigue, loss of appetite, and weight loss. Occasionally, infected individuals may not have any symptoms. Untreated, symptoms may last from several days to several weeks (longer in immunocompromised individuals), and weight loss can be significant (exceeding 20 pounds in some cases).

C. Vectors and Reservoirs

Humans are the only known reservoir for *C. cayetanensis*, although the epidemiology of human cyclosporiasis suggests the existence of animal reservoirs, possibly birds.

D. Modes of Transmission

Current knowledge of human cyclosporiasis suggests that it is not transmitted directly from person to person. After being shed in human stool, the parasite must undergo developmental changes (taking days to weeks) before becoming infectious. Humans become infected by consuming food or water that has been contaminated by *Cyclospora*.

E. Incubation Period

The incubation period for cyclosporiasis is about 1–2 weeks, with an average of 1 week.

F. Period of Communicability or Infectious Period

People may shed *Cyclospora* parasites from days to over one month (while actively ill). It is not known how long the parasite may be shed after symptoms have stopped.

G. Epidemiology

Cyclosporiasis was first recognized in 1979. The parasite appears to be widely distributed throughout the world, with a predominant number of cases occurring during the warmer months. The largest documented outbreaks of cyclosporiasis in the U.S. occurred during the summers of 1996 and 1997; a majority of those cases had consumed imported raspberries that were presumed to be contaminated.

H. Bioterrorist Potential

This pathogen is not considered to be of risk for use in bioterrorism.



Section 2:

REPORTING CRITERIA AND LABORATORY TESTING

A. What to Report to the Massachusetts Department of Public Health (MDPH)

Report a case that meets either of the following criteria:

- ◆ Demonstration of *C. cayetanensis* oocysts in stool or the parasite in duodenal/jejunal aspirates or small bowel biopsies; or
- ◆ Demonstration of *C. cayetanensis* DNA in stool, duodenal/jejunal aspirates, or small bowel biopsies.

Note: See Section 3C for information on how to report a case.

B. Laboratory Testing Services Available

The MDPH State Laboratory Institute (SLI) does not provide ova testing for *Cyclospora* from clinical or food samples at the time of this printing.



Section 3:

REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- ◆ To identify transmission sources of public health concern (e.g., contaminated food or water), and to stop transmission from such sources.
- ◆ To provide education about reducing risk of infection.

B. Laboratory and Health Care Provider Reporting Requirements

Cyclosporiasis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of cyclosporiasis, as defined by the reporting criteria in Section 2A.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of *Cyclospora* infection shall report such evidence of infection directly to the MDPH within 24 hours.

C. Local Board of Health (LBOH) Reporting and Follow-Up Responsibilities

Reporting Requirements

MDPH regulations (*105 CMR 300.000*) stipulate that cyclosporiasis is reportable to the LBOH and that each LBOH must report any case of cyclosporiasis or suspect case of cyclosporiasis, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS) using an official MDPH *Enteric Disease Case Report Form* (found at the end of this chapter). Refer to the *Local Board of Health Timeline* at the end of this manual's *Introduction* section for information on prioritization and timeliness requirements of reporting and case investigation.

Case Investigation

1. It is the responsibility of the LBOH to complete an official MDPH *Enteric Disease Case Report Form* (found at the end of this chapter) by interviewing the case and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the health care provider or from the medical record.
2. Use the following guidelines to assist in completing the form:
 - a. Accurately record the demographic information, date of symptom onset, symptoms, and medical information.
 - b. Accurately record all available clinical information, including onset date, symptoms, information regarding hospitalization, and clinician contact information.
 - c. Indicate *C. cayetanensis* as the etiologic agent.
 - d. When asking about exposure history (e.g., food, travel, activities), use the entire incubation period range for cyclosporiasis (1–2 weeks). Specifically, however, focus on the period around seven days prior to the case's onset, which is the average incubation period.
 - e. Record information pertaining to the case's possible exposures, including any restaurants at which the case ate, food item(s) consumed, and date(s) of consumption. If you suspect that the case became infected through food, use the MDPH *Foodborne Illness Complaint Worksheet* (found at the end of this chapter) to facilitate recording additional information. It is requested that the LBOH fax or mail this worksheet to the MDPH Center for Environment Health, Food Protection Program (FPP); see top of worksheet for fax number and address. This information is entered into a database to help link other complaints from neighboring towns, thus helping to identify foodborne illness outbreaks. *Note: This worksheet does not replace the MDPH Enteric Disease Case Report Form.*
 - f. Ask questions about travel history and outdoor activities to help identify where the case became infected.
 - g. Ask questions about water supply because cyclosporiasis may be acquired through water consumption. Record this information in the "Comments" section.
 - h. Household/close contact, pet or other animal contact, daycare, and food handler questions are designed to examine the case's risk of having acquired the illness from or the case's potential for transmitting it to these contacts. Determine whether the case attends or works at a daycare facility and/or is a food handler. As noted in Section 1D, current knowledge of cyclosporiasis suggests that it is not transmitted directly from person to person.
 - i. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge

information or is too ill to be interviewed), please fill out the case report form with as much information as you have gathered. Please note on the form the reason(s) why it could not be filled out completely.

3. After completing the form, attach laboratory report(s) and fax or mail (in an envelope marked "Confidential") to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to confirm receipt of your fax. The mailing address is:

MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)
305 South Street, 5th Floor
Jamaica Plain, MA 02130
Fax: (617) 983-6813

4. Institution of disease control measures is an integral part of case investigation. It is the responsibility of the LBOH to understand, and if necessary, institute the control guidelines listed in Section 4.



Section 4:

CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (*150 CMR 300.200*)

Minimum Period of Isolation of Patient

Food handlers with confirmed *Cyclospora* infection should be excluded from work. After diarrhea has resolved, food handlers may only return to work after producing one negative stool specimen. If the case has been treated with an antimicrobial, the stool specimen should not be collected until at least 48 hours after cessation of therapy.

Minimum Period of Isolation of Contacts

Contacts with diarrhea who are food handlers shall be considered the same as a case and shall be handled in the same fashion. In outbreak circumstances, asymptomatic contacts who are food handlers shall be required to produce one negative stool specimen. Otherwise, no restrictions.

Note: A food handler is any person directly handling or preparing food. See Glossary (at the end of this manual) for a more complete definition.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare and School

As noted in Section 1D of this chapter, current knowledge of human cyclosporiasis suggests that it is not transmitted directly from person to person. After being shed in stool, the parasite must undergo developmental changes (taking days to weeks) before becoming infectious. Humans become infected by consuming food or water that has been

contaminated with feces containing *Cyclospora*. Therefore, non-food handling students, teachers, and daycare attendees can continue to attend their programs as long as they feel well enough to do so. However, since most staff in childcare programs are considered to be food handlers, those with *Cyclospora* in their stools can remain on site but must not prepare food or feed children until their diarrhea is gone and they have 1 negative stool specimen (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per *105 CMR 300.200*).

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If the number of reported cases of cyclosporiasis in your city/town is higher than usual or if you suspect an outbreak, investigate to determine the source of infection and the mode of transmission. A common vehicle, such as water or food, should be sought, and applicable preventive or control measures should be instituted (e.g., removing an implicated food item from the environment). Consult with the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

Note: Refer to the MDPH's Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks. Copies of this manual have been made available to LBOH. It can also be located on the MDPH website in PDF format at www.mass.gov/dph/fpp/refman.htm. For the most recent changes to the Massachusetts Food Code, contact the FPP at (617) 983-6712 or through the MDPH website at www.mass.gov/dph/fpp.

D. Preventive Measures

Personal Preventive Measures/Education

To avoid infection with *Cyclospora*, recommend that individuals:

- ◆ Avoid drinking unboiled or untreated water when hiking, traveling in developing countries, or visiting areas where water quality is unknown. Bringing water to a full, rolling boil is sufficient to kill *Cyclospora*.
- ◆ Thoroughly wash all fresh fruits and vegetables prior to consumption.



ADDITIONAL INFORMATION

The formal Centers for Disease Control and Prevention (CDC) surveillance case definition for *Cyclospora* is the same as the criteria outlined in Section 2A of this chapter. (CDC case definitions are used by the MDPH and the CDC to maintain uniform standards for national reporting.) When reporting to the MDPH, always use the criteria outlined in Section 2A.

Note: The most up-to-date CDC case definitions are available on the CDC website at www.cdc.gov/epo/dphsi/casedef/case_definitions.htm.



REFERENCES

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FORMS & WORKSHEETS

Cyclosporiasis

Cyclosporiasis



LBOH Action Steps

This form does not need to be submitted to the MDPH with the case report form. It is for LBOH use and is meant as a quick-reference guide to cyclosporiasis case investigation activities.

LBOH staff should follow these steps when cyclosporiasis is suspected or confirmed in the community. For more detailed information, including disease epidemiology, reporting, case investigation, and follow-up, refer to the preceding chapter.

- ☐ Notify the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 to report any confirmed case(s) of cyclosporiasis.
- ☐ Obtain laboratory confirmation.
- ☐ For cyclosporiasis suspected to be the result of food consumption, complete a MDPH *Foodborne Illness Complaint Worksheet* and forward to the MDPH Center for Environmental Health, Food Protection Program (FPP).
- ☐ Identify other potential exposure sources, such as a water source.
- ☐ Determine whether the case attends or works at a daycare facility and/or is a food handler.
- ☐ Identify other potentially exposed persons.
- ☐ Fill out the case report form (attach laboratory results).
- ☐ Send the completed case report form (with laboratory results) to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS).